

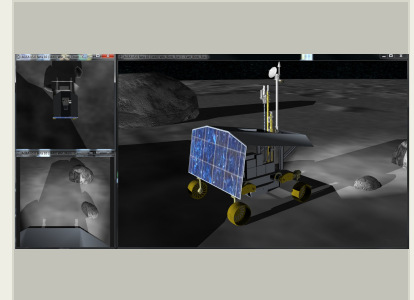


## Project Introduction

Develop and mature rover technologies supporting robotic exploration including rover design, controlling rovers over time delay and for exploring . Technology development is currently focused on Resource Prospector mission which will search for volatiles (including water) on the Lunar poles

## Anticipated Benefits

**Benefits to NASA Funded Missions:** The rover technology developed in this project enables searching for volatiles on remote surfaces. The current target of this work is the AES Resource Prospector mission. This element is performing the technology development for the rover which will support mapping volatiles in water ice at the lunar polars. **Benefits to NASA Unfunded & Planned Missions:** The technology developed in this element will be extensible to rovers required for future human Mars missions. Additionally, the component technologies (actuators, motors, motor control, software, navigation, active suspensions, etc) coming out of this element after technology maturation will be available for infusion into out other NASA missions, payload, systems and subsystems. **Benefits to Other Government Agencies:** The extreme terrain mobility and dexterous mobility system capabilities through rovers developed in this element applicability in the Department of Defense (for troop mobility, robotic scouting, state side logistics support) Department of Homeland Security (border patrolling, and Department of Energy (access to radiated areas). **Benefits to the Commercial Space Industry:** As commercial space moves beyond cargo and crew resupply to ISS, the technologies developed within this element could be shared with commercial space companies to enable surface mobility on Mars or moon. **Benefits to the Nation:** This item does not benefit the nation



This picture shows a concept for the resource prospector surface element (rover and science payload).

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## Primary U.S. Work Locations and Key Partners

Organizations Performing Work	Role	Type	Location
★ Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
● Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California
● Exploration Capabilities	Supporting Organization	NASA Program	
● Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio
● Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California
● Kennedy Space Center(KSC)	Supporting Organization	NASA Center	Kennedy Space Center, Florida

## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Center / Facility:

Johnson Space Center (JSC)

### Responsible Program:

Game Changing Development

## Project Management

### Program Director:

Mary J Werkheiser

### Program Manager:

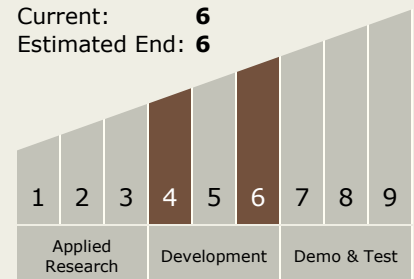
Gary F Meyering

### Principal Investigator:

William J Bluethmann

## Technology Maturity (TRL)

Start: 4  
Current: 6  
Estimated End: 6





## Primary U.S. Work Locations

California	Florida
Ohio	Texas

## Target Destination

The Moon

## Project Transitions

**October 2014:** Project Start**June 2017:** Closed out

**Closeout Summary:** The Rover Technologies project developed and tested a large number of technologies critical to a lunar rover in relevant environmental conditions. This has resulted in TRL advancement on many key components. Many of these technologies were incorporated into fully functional prototype rovers and performance was demonstrated in simulated conditions. The mission target is the Lunar Resource Prospector which has very demanding environmental and performance requirements. Improvements in rover capabilities such as localization, mobility, and operations were successfully demonstrated at JSC and ARC test facilities. The Rover technologies Project developed technologies needed for lunar rovers with a focus on the Resource Prospector Mission. Prototype rovers demonstrated a mobility test of a first generation Lunar form and function rover, called RP15, exploring vision in the harsh lighting of the lunar poles. Additional testing verified launch environment capability. Additional generation rover subsystems, advanced navigation capabilities, localized mapping software and driving tools that support rover exploration at a high pace.

## Images

**Rover Technologies:  
Resource Prospector Rover  
Concept**

This picture shows a concept for the resource prospector surface element (rover and science payload).

(<https://techport.nasa.gov/image/143226>)



**Project Website:**

<https://www.nasa.gov/directorates/spacetech/home/index.html>